

**REMARKS**

Claims 7, 10, 12-15, 20-25, 28-30, 33, 35-37 and 40-59 are pending and stand rejected by the Office. Reconsideration of the current rejections is respectfully requested in light of the amendments and the remarks herein. Independent claims 7, 10, 20, 21, 22, 35, 40 and 41 are amended to incorporate the limitations of dependent claims 44, 46, 48, 50, 52, 54, 56 and 58, respectively. Claims 44, 46, 48, 50, 52, 54, 56 and 58 are cancelled and claims 45, 47, 49, 51, 53, 55, 57 and 59 are amended to change dependency.

***Claim Rejections 35 U.S.C. § 103(a)***

Claims 7, 10, 12, 13, 20-25, 28-30, 33, 40, 42 and 43 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Sweitzer (U.S. Patent No. 6,018,617) in view of Bloom (U.S. Patent No. 5,597,312) and further in view of Erickson (U.S. Patent No. 5,902,114). Claims 14, 15, 35-37 and 41 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Sweitzer and Bloom in further view of Wen (U.S. Patent No. 6,341,959). Claims 44-53, 56, and 57 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Sweitzer, Bloom, Erickson, and further in view of Ho (U.S. Patent No. 5,836,771). Claims 54, 55, 58 and 59 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Sweitzer, Bloom, Wen, and Erickson, and further in view of Ho.

**Claim 7**

Claim 7 is directed to a computer-implemented method of automatically generating a mathematical word problem assessment item. Claim 7 is amended to recite certain features of claim 44. Claim 7 now additionally recites that generating the text phrase comprises automatically resolving a context-dependent selection. In light of this amendment, it is now believed that the rejection of claim 44 is relevant to claim 7. In rejecting claim 7, the Office

admits that Sweitzer, Bloom and Erickson fail to disclose the incorporated feature. Final Office action, pg. 18. Instead the Office cites to col. 22, line 59 – col. 23, line 10 of Ho in rejecting claim 44. However, the cited portion of Ho states:

Questions Matching Engine

The embodiment shown in FIG. 2 can answer an infinite number of questions. FIG. 12 illustrates another embodiment **500** of the answer generator, which provides answers to a finite number of questions, but requires fewer steps to generate answers as compared to the embodiment shown in FIG. 2. Also, the answer generator **500** can answer nonnatural-language questions, and grammatically-context dependent questions. In this embodiment, the database **106** includes a questions table, which contains many questions, each with its corresponding answer. A question matching engine 529 compares the question entered with questions in the database. An answer retriever 539 retrieves the answer to the question in the database that matches the entered question.

The cited portion of Ho merely discloses a questions matching machine which retrieves an answer to a question from a questions table containing all the questions and answers. It does not involve any text generation at all, let alone generating a text phrase comprising automatically resolving a context-dependent selection as recited by claim 7. Because the combination of the cited references does not disclose the above-discussed feature of claim 7, it is respectfully requested that claim 7 be allowed.

Further, the examiner is construing the word “automatically” too broadly in a manner inconsistent with the disclosure. The application indicates that although user input for certain parameters may be utilized, other portions of generating the mathematical word problem are performed automatically. One of ordinary skilled in the art would readily understand that the portions performed automatically are performed without user intervention insofar as the other portions (i.e., receiving input parameters) are explicitly described as stemming from user input.

Nevertheless, in an effort to expedite prosecution, claim 7 is amended to recite generating an assessment item including automatically generating a text phrase positioned between a first numerical value corresponding to the first number variable and a second numerical value corresponding to the second number variable based on the determined relationship; wherein generating the text phrase comprises automatically, without user intervention, choosing by the processor one or more of word order, word choice, word format, sentence structure, grammar and language of the text phrase based on the determined relationship. The amendment also has support throughout the specification, including at paragraphs [0017], [0018] and [0021] of the published application, and Figs. 1 and 4.

In the Advisory Action of September 17, 2010, the Office alleges that "applicant asserts an overly narrow reckoning of the term automatically." Specifically, the Office alleges "[i]t is the Office's position that the methods of Sweitzer, Bloom, and Erickson are performed automatically if any part is performed by the computer; the common meaning of the term 'automatic' does not require that every possible element is performed without the possibility of human intervention. For example, an automobile does not drive itself, thus, even though it moves automatically, it still requires an operator." Though the applicant respectfully disagrees with the Office's assertion, claim 7 is amended to clarify the claimed subject matter to expedite the prosecution.

It is respectfully submitted that these cited references, either singly or in combination, do not disclose or teach automatically generating a mathematical word problem using a processor for automatically generating a text phrase positioned between a first numerical value corresponding to the first number variable and a second numerical value corresponding to the second number variable based on the determined relationship, wherein generating the text phrase

comprises automatically, without user intervention, choosing by the processor one or more of word order, word choice, word format, sentence structure, grammar, and language of the text phrase based on the determined relationship, as required by claim 7.

For example, in the final Office Action, the Office cites to various portions of Sweitzer and Bloom as allegedly disclosing automatically generating a text phrase positioned between two numerical variables or automatically choosing one or more of word order, choice, format, sentence structure, grammar, and language, based on the determined relationship. These portions of Sweitzer and Bloom ***do not*** disclose generating mathematical word problems by automatically generating text phrases in the manner claimed in claim 7.

First, with regard to Sweitzer, the Office admits: “What Sweitzer fails to explicitly teach is wherein generating the text phrase comprises automatically choosing by the processor one or more of word order, word choice, word format, sentence structure, grammar, and language of the text phrase based on the determined relationship.” Final Office Action at p. 3. As an example, the cited portion of Sweitzer at col. 3, lines 1-5 states merely that the ***presentation*** is chosen automatically. In contrast, the claim limitation at issue goes to the automatic selection of the ***content*** of the text phrase of the mathematical word problem since text phrase that is chosen is explicitly based upon the ***relationship between the first number variable and second number variable***. Although Sweitzer may disclose automatically controlling the visual appearance (presentation) of mathematical word problems, there is ***no disclosure*** in Sweitzer of generating a mathematical word problem wherein generating a text phrase for the problem comprises automatically, without user intervention, choosing by the processor one or more of word order, word choice, word format, sentence structure, grammar and language of the text phrase based on a determined relationship between a first number variable and a second number variable.

Likewise, Bloom does not make up for Switzer's deficiency. As an example, the cited portion of Bloom at col. 20, lines 24-29 on its face merely indicates that a completed conversation can be saved and ***automatically indexed*** – it has nothing to do with automatic text generation. Indeed, the conversation referred to is a conversation between a trainee and a hypothetical customer in a computerized tutoring simulation for training a customer service representative (CSR) trainee on the procedures for conversing with a customer and using order entry software in simulated on-the-job customer service scenarios. *See* Bloom at col. 3, lines 49-64; col. 1, lines 20-13. Bloom, in fact, has nothing whatsoever to do with test generation or mathematical word problems. In any event, the cited portion of Bloom simply indicates that when the CSR trainee's conversation in the simulation has been completed and saved, it can be automatically indexed, i.e., catalogued, according to its high-level scenario and sub-topic. Col. 20, lines 24-29. That is, it is automatically indexed so that someone else can locate that scenario. *Id.* Further, as argued in the applicant's previous response, other portions of Bloom, e.g., col. 19, lines 54-65, col. 20, lines 3-19 indicate that whatever text generation is done in the authoring stage is explicitly done by the author, not done automatically without user intervention.

Accordingly, Bloom clearly does not disclose generating a text phrase comprising automatically, without user intervention, choosing by the processor one or more of word order, word choice, word format, sentence structure, grammar, and language of the text phrase based on a determined relationship between a first number variable and a second number variable.

Additionally, the Office cites to various portions of Erickson. Final Office action at pp. 5-6. Failing to identify which portion of Erickson teaches the automatic text phrase generation recited by claim 7, the Office alleges that “[i]t is apparent that the mathematical word problems of Erickson are generated by generating a text phrase, and positioning it between a first and

second numerical input value, based on the mathematical characterization of the problem.” Final Office action at p. 5. However, Erickson is generally directed to a method of teaching the formulation of word problems (i.e., teaching students how to do word problems). See, e.g., col. 4, lines 59-61, col. 5, lines 5-8 and 54-58, col. 6, lines 3-19. Notwithstanding the Office’s allegations, Erickson contains no disclosure of generating mathematical word problems by automatically, without user intervention, generating text phrases in the manner claimed in claim 7. There are many ways of generating mathematical word problems. The Office’s unsupported assertion that it is “apparent” the word problems in Eriksson are generated in the manner claimed is facially deficient. If the Office is asserting that such a feature is inherent (i.e., necessarily present), such an assertion is plainly wrong insofar as Sweitzer and Bloom explicitly describe inputting text of a word problem manually by a user, not automatically, as previously explained. Accordingly, the authoring of a mathematical word problem does not necessarily lead to generating the mathematical word problem by automatically generating text phrases in the manner claimed in claim 7. Accordingly, the Office’s rejection plainly does not make out a *prima facie* case of obviousness and must be withdrawn.

Furthermore, in the Advisory Action, the Office alleges that the applicant's own invention is not "automatic" by pointing at paragraph [0061] and Fig. 3 of the instant application as allegedly showing "a user alters the variables for which the assessment item solves." However, claim 7 requires automatic generation of a text phrase based on the determined relationship. Claim 7 does not require all steps related to the generation of the assessment item to be automatic, without user intervention. Paragraph [0061] and Fig. 3 indicate that a number of variables can be defined for generation of an assessment item. As disclosed in paragraphs [0061]-[0065] of the instant application, defining the variables does not involve any generation

of a text phrase between two number variables. Instead, the variables are defined before any generation of text phrases. Thus, whether the variables are defined automatically or can be altered by a user has no bearing on the patentability of claim 7's subject matter because claim 7 requires automatic generation of a text phrase, not automatic definition of variables.

Because the cited references, either singly or in combination, do not disclose or teach the above-discussed features of claim 7, withdrawal of the rejection and allowance of claim 7 is respectfully requested for at least these reasons.

### **Other Independent Claims**

All of the other independent claims: 10, 20, 21, 22, 35, 40 and 41, are amended to recite similar distinguishing subject matter as that recited claim 7. As such, these claims are allowable at least for reasons similar to those explained above for claim 7. Further, the Office's reliance on Wen (for allegedly disclosing language teaching using grammatical rules) does not make up for these deficiencies. Accordingly, it is respectfully requested that the § 103 rejections of claims 10, 20, 21, 22, 35, 40 and 41 be withdrawn and that these claims be allowed.

The remaining dependent claims are allowable at least by virtue of dependency.

Assignee at this time has not provided arguments in support of the patentability of the dependent claims. It is respectfully submitted that because the independent claims are now in condition for allowance, the dependent claims, which depend directly or indirectly therefrom, are also in condition for allowance. However, assignee reserves the right to argue the patentability of the dependent claims in the instant application at a future time, should that become necessary.

**Conclusion**

For at least the reasons set forth above, withdrawal of the rejections and allowance of this application are respectfully requested. Should there be any questions in connection with this application, the Office is urged to contact the undersigned at the number below to resolve any issues that may remain.

The Commissioner is authorized to charge any fees that may be required by this paper to Jones Day Deposit Account No. 503-013 to maintain the pendency of this application.

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